ENCLOSURE G.2

BIOLOGICAL ASSESSMENT FOR ENDANGERED SPECIES IN OUTER CONTINENTAL SHELF WATERS OF SOUTH AND CENTRAL CALIFORNIA FOR CONSULTATION WITH THE UNITED STATES FISH AND WILDLIFE SERVICE

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Submitted to:
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Washington, D.C.

and

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LIST OF ACRONYMS

USFWS	United States Fish and Wildlife Service
OCS	Outer Continental Shelf
MMS	Minerals Management Service
NPDES	National Pollutant Discharge Elimination System
EPA	Environmental Protection Agency
OSHA	Occupational Health and Safety Administration
DMR	Discharge Monitoring Report
CWA	Clean Water Act
ESA	Endangered Species Act
MBCA	Migratory Bird Conservation Act
MMPA	Marine Mammal Protection Act
EFH	essential fish habitat

1.0 INTRODUCTION

The purpose of this biological assessment is to identify the potential for and types of impacts to federally-listed or proposed species that could occur as a result of EPA's proposal to reissue its general National Pollutant Discharge Elimination System (NPDES) permit for offshore oil and gas exploration, development and production facilities located in federal water off Southern California. This assessment should provide the basis for consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA). There are 22 existing production platforms located in federal waters of the Outer Continental Shelf (OCS) (beyond the 3-nautical mile territorial limit within the lease blocks shown in Figure 1) between Huntington Beach and just north of Point Arguello. From south to north, the platforms are identified as Eureka, Ellen/Elly, Edith, Gina, Gail, Gilda, Grace, Habitat, Hogan, Houchin, Henry, Hillhouse, A, B, C, Hondo, Harmony, Heritage, Hermosa, Harvest, Hildago, and Irene. New production platforms would not be covered by the new general permit; however, discharges from future exploratory operations would be covered. All exploration which may occur during the term of the general permit would also occur within the lease blocks shown in Figure 1. OCS oil and gas developments are also regulated by the Minerals Management Service (MMS).

1.1 PROJECT DESCRIPTION

Normal operations at oil and gas exploration, development, and production facilities result in a number of discharges that require permitting under the NPDES program of the Clean Water Act (CWA). The proposed action is to renew the general NPDES permit for these discharges from the offshore facilities for 5 years beginning in mid 2000.

1.1.1 Discharges Covered

The discharges to be permitted include the following:

- Drilling fluids and cuttings (Discharge 001)
- Produced water (Discharge 002)
- Well treatment, completion, and workover fluids (Discharge 003)
- Deck drainage (Discharge 004)
- Domestic and sanitary waste (Discharge 005)
- Blowout preventer fluid (Discharge 006)
- Desalination unit discharge (Discharge 007)
- Fire control system water (Discharge 008)
- Non-contact cooling water (Discharge 009)
- Ballast and storage displacement water (Discharge 010)
- Bilge water (Discharge 011)
- Boiler blowdown (Discharge 012)
- Test fluids (Discharge 013)
- Diatomaceous earth filter media (Discharge 014)
- Bulk transfer operations (Discharge 015)
- Uncontaminated water (Discharge 016)
- Water flooding discharges (Discharge 017)

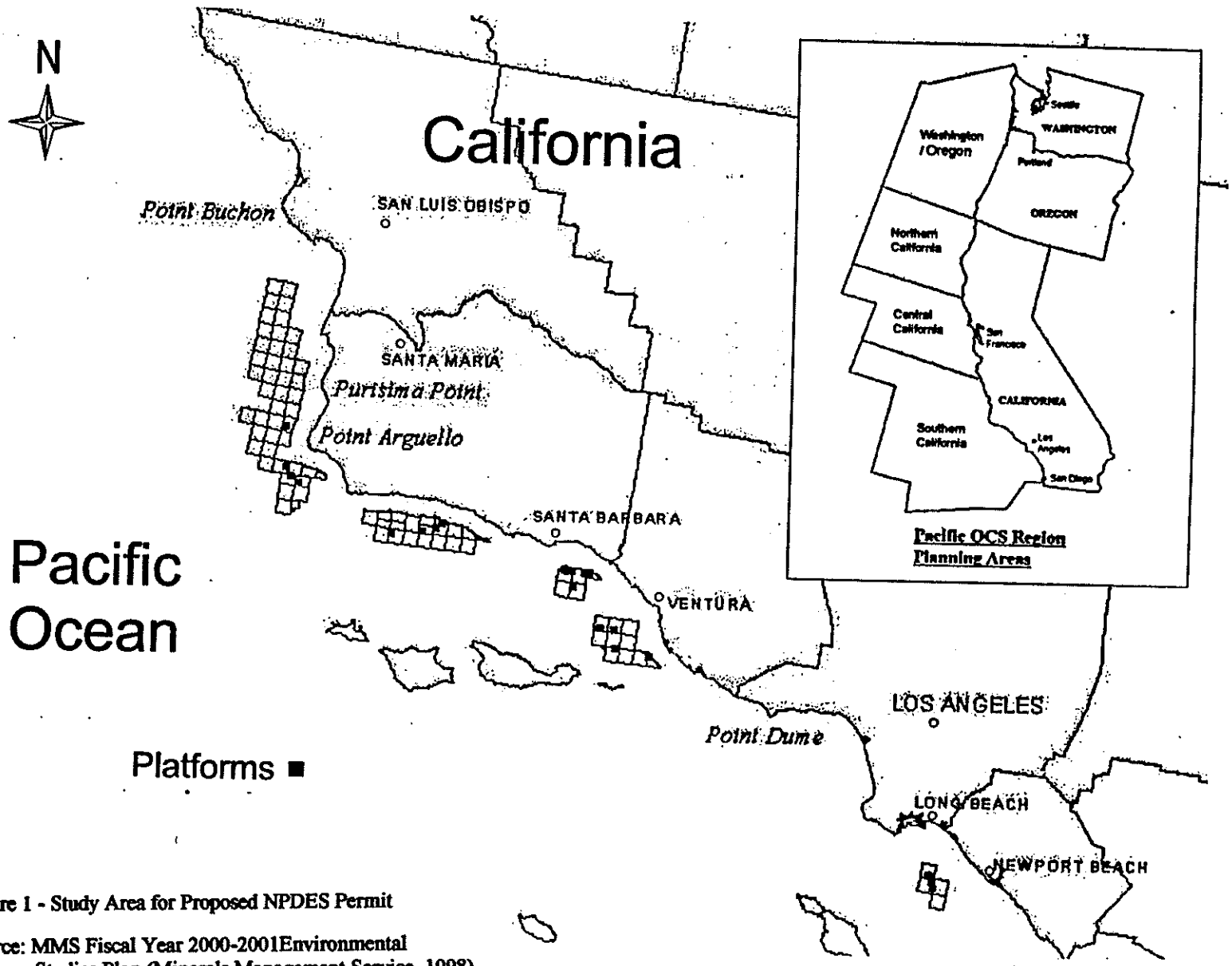

Figure 1 - Study Area for Proposed NPDES Permit

Source: MMS Fiscal Year 2000-2001Environmental Studies Plan (Minerals Management Service, 1998)

- Laboratory waste (Discharge 018)
- Excess cement slurry (Discharge 019)
- Muds, cuttings, and cement at sea floor (Discharge 020)
- Hydrotest water (Discharge 021)
- H_2S gas processing waste water (Discharge 022)

MMS estimates that 40-50 development wells will be drilled during the permit term from existing production platforms; 5-6 exploratory wells are anticipated (personal communication from Dave Panzer to EPA, Region 9). Exploratory wells are drilled from exploratory drilling vessels (which are typically onsite only a few months) which have similar discharges as production platforms with the exception of produced water. Given the small number of exploratory wells anticipated to be drilled, the short-term nature of the operations, and the absence of produced water discharges, the potential impacts from exploratory operations are expected to be low in comparison to production platforms.

The permit covers produced water discharges treated on offshore platforms as well as discharges into the lease blocks from onshore facilities (produced water treatment facilities) operating in support of the platforms. The allowed mixing zone is the larger of 100 meters laterally around the discharge point from the sea surface to the sea floor, or to the boundary of the zone of initial dilution as calculated by a plume model (or other method approved by the Environmental Protection Agency [EPA]).

Discharges that are not part of normal operations, such as spills and other unintentional or non-routine discharges of pollutants, are not authorized under this permit, nor are discharges to wetlands adjacent to the territorial seas and inland coastal waters of the State of California.

1.1.2 Effluent Limitations and Monitoring Requirements

The general permit establishes effluent limitations, prohibitions, reporting requirements, and other conditions for these discharges. Specific requirements are given individually for discharges 001 through 005, while requirements for the remaining discharges are combined.

For drilling fluids and cuttings no free oil, oil-based fluids, or diesel oil can be discharged. The concentration of cadmium and mercury in barite which is used in drilling mud is limited to 3 mg/kg and 1 mg/kg, respectively. Bioassay toxicity testing is required for drilling fluids and cuttings which are discharged. An inventory of all drilling fluid constituents used in each well is required to be reported to the EPA. The total annual discharge volumes for cuttings, drilling fluids, and excess cement are specified for each platform in the permit.

For produced water, sampling is required to determine if the discharge is likely to exceed water quality criteria shown in Table 1.

The discharge of oil and grease is limited to 29 mg/l monthly average and 42 mg/l daily maximum, as sampled weekly. The maximum volume of produced water discharge allowed each year for each platform is specified in the permit. Specifications for chronic toxicity testing of the discharges are also specified.

For well treatment, completion, and workover fluids, the effluent limitations include no free oil discharge and oil and grease concentrations not to exceed the same levels as required for produced water.

Deck drainage effluent limitations specify no free oil discharge.

For domestic and sanitary wastes, no discharge of floating solids or foam is allowed. Total residual chlorine in sanitary waste discharges must be a minimum of 1 mg/l. No food waste discharge is allowed within 12 nautical miles of the nearest land.

For miscellaneous discharges 006 through 022, effluent limitations include no free oil and monitoring is required for chlorine in the fire control system test water, non-contact cooling water, and hydrotest water.

Other discharge conditions and limitations include:

1. Discharge of surfactants, dispersants, and detergents shall be minimized except as necessary to comply with the safety requirement of the MMS and Occupational Health and Safety Administration (OSHA). Discharge of dispersants to marine waters in response to oil or other hazardous spills is not authorized.

2. No discharge of diesel oil, halogenated phenol compounds, or chrome lignosulfonate.

3. No discharge of produced sands.

4. Radioactive tracer concentrations above background levels shall be limited in accordance with 10 CFR 20 Appendix B.

1.1.3 Monitoring, Recording, and Reporting Requirements

Monitoring shall be in accordance with test procedures approved under 40 CFR Part 136 unless other procedures have been specified in the permit. Samples for monitoring shall be representative of the monitored activity. For reporting, monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form and submitted to EPA quarterly. Any monitoring results taken in addition to those required by the permit and using the approved test procedures shall be included in the data submitted in the DMR. Records of all monitoring shall be kept for a minimum of 3 years. Non-compliance incidents that may endanger health or the environment shall be reported orally within 24 hours from the time the permittee becomes aware of the incident with written notice following within 5 days.

1.2 DATA SOURCES

Information on the species covered in this biological assessment was obtained from published literature, the Internet, and contacts with local specialists.

Table 1. Produced Water Reasonable Potential Sampling Requirements

Constituent	*Water Quality Criteria (ug/l)*[1]
Ammonia	1,300[2]
Arsenic	36
Cadmium	1
Lead	8.1
Manganese	100
Mercury	0.051
Nickel	8.2
Selenium	71
Silver	1.9
Zinc	81
Benzene	71
Benzo(a)anthracene	0.049
Benzo(a)pyrene	0.049
Chrysene	0.049
Benzo(k)fluoranthene	0.049
Benzo(b)fluoranthene	0.049
Dibenzo(a,h)anthracene	0.049
Hexavalent chromium	50
Phenolic compounds	4,600,000
Toluene	200,000
Ethylbenzene	29,000
Naphthalene	Not available
2,4-dimethylphenol	2,300
Undissociated sulfides	2
Whole effluent toxicity	1 TUc

1 Federal criteria applicable after dilution at the end of the mixing zone.
2 Assumes an ambient ocean temperature of 15 °C, salinity of 30 g/kg and pH of 8.1. Alternate criteria may apply to specific platforms based on platform-specific ocean conditions.

1.3 REGULATORY SETTING

The primary federal regulations that apply to this project are the Clean Water Act (CWA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Migratory Bird Conservation Act (MBCA), and Magnuson-Stevens Act.

The permit for the discharges from the offshore facilities will be issued under Section 402 of the Clean Water Act. The discharges must also be in compliance with sections 301, 302, 306, 307, 308, 318, and 405 of the Act.

The Endangered Species Act requires formal consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service whenever federal actions have the potential to adversely affect threatened or endangered species, or species proposed for such listing. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over all birds, terrestrial and freshwater fish, wildlife, and plants, as well as the sea otter. The National Marine Fisheries Service has jurisdiction over marine mammals (except the sea otter), anadromous fishes, and marine fisheries resource.

The Marine Mammal Protection Act prohibits the taking (e.g., harassment, disturbance, capture, and death) of marine mammals except as set forth in the Act.

The Migratory Bird Conservation Act protects migratory birds, including all seabirds, from unauthorized take.

The Magnuson-Stevens Act regulates fishing in U.S. waters. The 1996 amendments require an essential fish habitat (EFH) impact assessment for federal actions that may adversely affect EFH.

2.0 SPECIES OF CONCERN

A number of federally-listed threatened or endangered species are known to be present, at least periodically, in the area where the offshore facilities are located. This biological assessment focuses on species that could potentially be affected by the project. The other species will be covered in enough detail to substantiate the assessment of no impact. The following sections describe the general marine biological resources present in the project area and the federally-listed species covered by this biological assessment.

2.1 OVERVIEW OF BIOLOGICAL RESOURCES WITHIN PROJECT AREA

Point Conception is considered a boundary between biotic provinces (Hedgpeth 1957; Dawson 1961; Hall 1964), although a transition zone exists at this boundary (Newman 1979), with warmer water species and communities to the south and colder water ones to the north. The Southern California Bight is within the southern biotic province and extends from Point Conception in the north to Cabo Colnett, Baja California, Mexico on the south and west to the California Current (SCCWRP 1973). Most (18) of the 22 platforms are located in the Southern California Bight with the remaining four located just north of Point Conception.

Marine habitats present in the project area include open ocean/water column (both shallow and deep), soft bottom, hard bottom (rocky reefs), water surface, kelp beds (generally associated with hard bottom in shallow water), and intertidal (both sandy beach and rocky shore). The platforms are all in open water with their legs into soft bottom. Shallow water and intertidal habitats are located approximately 3 or more miles away along the shoreline.

Soft bottom habitats support infauna (living within the sediments) and epifauna (living on the surface of the sediments). On the continental shelf, polychaete worms are the dominant infaunal species followed by crustaceans such as amphipods. Echinoderms, such as brittle stars, and molluscs are also common (Jones 1969). The density of these organisms ranges from about 2,500 per square meter (m^2) to over 5,000 per m^2. Four major benthic communities are present on the mainland shelf in the Santa Barbara Channel (Jones 1969). Common species include the tube-building worm (*Diopatra ornata*), a brittle star (*Amphiodia urtica*), and a bivalve mollusc (*Cardita* sp.). Common epifauna on the shelf and slope include sea urchins, prawns and shrimp, sea cucumbers, and starfish (Word and Mearns 1979; Mearns and Sherwood 1979).

Rocky substrates in shallow nearshore waters (less than 100 feet) are highly productive and often support kelp beds. The rock surfaces are generally completely encrusted with invertebrates and algae. Fish and mobile invertebrates such as lobster and crabs are also abundant. In deeper waters above the OCS, attached and mobile invertebrates are commonly found on hard substrates, but light levels are too low to support algae.

The legs of platforms provide hard substrate for attachment of many organisms. Surveys of Hondo A showed mussels (*Mytilus* sp.) and goose-neck barnacles (*Pollicipes polymerus*), green anemones (*Anthopleura elegantissima*), and ochre sea stars (*Pisaster ochraceus*) to be abundant near the water surface (Exxon 1982). Above that is a zone of barnacles and filamentous green algae. Below about

10 feet, red anemones (*Corynactis californica*) and plume anemones (*Metridium senile*) are common. Rock scallops (*Hinnites multirugosus*) are common to depths of about 66 feet and provide substrate for barnacles and anemones. A few crabs are present in crevices, and starfish abundance decreases with depth. A mound of mussel and barnacles that have fallen from the platform is present at the bottom of the platform. Remote photographs of this shell pile indicate that spot prawns (*Pandalus platyceros*) and rock crab (*Cancer* sp.) are abundant, probably due to the increased food source.

The water column supports planktonic plants and animals as well as a variety of fish, marine mammals, and occasionally sea turtles. Seabirds use the water surface for resting, and most forage on the organisms in the surface layer. Phytoplankton form the base of the marine food web and include blue-green algae, diatoms, dinoflagellates, silicoflagellates, and cocolithiphores (BLM 1979). Zooplankton include species that spend their entire life cycle in the water column as well as the egg, larval, or juvenile stages of species whose adult stage is not planktonic. The abundance and species composition of plankton vary considerably over space and time in the ocean in response to physical, chemical, and biological factors.

Nearly 500 species of fish are found in the coastal marine waters of southern California (Miller and Lea 1972). Some species are found primarily in shallow waters near shore, associated with the bottom (benthic) at various depths, or in the water column. The diversity of habitats in shallow, nearshore waters (e.g., rocky reefs, kelp beds, and sandy bottom) and the high productivity generally result in a greater abundance fish and diversity of species near shore. Schooling open water species such as anchovies can also be very abundant in limited areas.

Offshore platforms attract a variety of species and age classes of fish, and may provide nursery grounds for some species (Love 1997). Studies at seven platforms in the Santa Barbara Channel and north to Platform Irene have found that rockfish (*Sebastes* spp.) make up 90 to 95 percent of the fish (Love 1997). These fish form three communities: mid-water, bottom (on mussel beds), and lower platform. The mid-water community is primarily the young of the year and one- to two-year-old fish with widow rockfish (*Sebastes entomelas*) being the most common. The bottom community on the mussel shells is predominantly small fish (either young fish or species that are small as adults). The lower platform community fish are generally under the lowest cross beams within 5 feet of the structure. Some species, such as painted greenling (*Oxylebius pictus*) and bocaccio (*Sebastes paucispinis*), have smaller individuals in mid-water and larger individuals at the bottom. Platform depth influences the number of species at the bottom but not at mid-water. The species present is also related to geographical location of the platform.

Open waters along the coast of southern California are used by a variety of marine mammals and seabirds. The California sea lion (*Zalophus californianus*) is the most common pinniped in the project area, and harbor seals (*Phoca vitulina*) are present as well. Northern elephant seals (*Mirounga augustirostris*) are common in the Santa Barbara Channel. The Channel Islands, particularly San Miguel, are important rookeries for five species of pinnipeds. Eleven species of whales and 17 species of dolphins and porpoises are known from the Southern California Bight. Whale species not listed in Table 2 include Hubb's beaked whale (*Mesoplodon carlhubbsi*), beaked whale (*Mesoplodon ginkodens*), and Cuvier's beaked whale (*Ziphius cavirostris*). Of the dolphins and porpoises, the most common are common dolphin (*Delphinus delphis*), Pacific white-sided

dolphin (*Lagenorhynchus obliquidens*), Pacific bottlenose dolphin (*Tursiops gilli*), Dall porpoise (*Phocoenoides dalli*), and pilot whale (*Globicephala macrorhynchus*). Less common species are Risso's dolphin (*Grampus griseus*), northern right whale dolphin (*Lissodelphis borealis*), and killer whale (*Orcinus orca*). Sea otters (*Enhydra lutris nereis*) are present in the northern end of the project area (Dohl et al. 1980; Bonnell et al. 1980; UC Santa Cruz 1980; Dames & Moore 1982; BLM 1981).

Many species of seabirds use coastal habitats (mainland and islands) and the open ocean, and a number of species breed on the Channel Islands (Webster et al. 1980; Bonnell et al. 1980). Common species that forage in offshore waters include California brown pelican (*Pelecanus occidentalis californicus*), Brandt's cormorant (*Phalacrocorax penicillatus*), double-crested cormorant (*Phalacrocorax auritus*), western grebe (*Aechmorphus occidentalis*), western gull (*Larus occidentalis*), Heermann's gull (*Larus heermanni*), and Bonaparte's gull (*Larus philadelphia*). Species commonly found foraging on sandy beaches, particularly during winter, include marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), black-bellied plover (*Squatarola squatarola*), and whimbrel (*Numenius phaeopus*). The California least tern (*Sterna antillarum browni*) and western snowy plover (*Charadrius alexandrinus nivosus*) both breed on sandy beaches. Gulls and pelicans also rest on beaches. Shallow nearshore waters are used by several species of terns for foraging.

2.2 SPECIES DESCRIPTIONS

Federally listed species present in the project area are presented in Table 2. The likelihood that these species could be affected by permitted discharges from the OCS oil and gas facilities is also shown in the table. This likelihood was determined based on the number of individuals present in the project area relative to the regional population size, the amount of time per year that the species could be present in the project area, and the primary food sources for the species. The unlikely category represents species with few individuals present, generally for only part of the year, that forage primarily away from the OCS oil and gas facilities. The descriptions for those species unlikely to be affected by the project discharges are less detailed that for those species that could be affected. The gray whale has been removed from the endangered species list and is not covered further in this document.

2.2.1 Southern Sea Otter

Species Description

The southern sea otter was federally listed as threatened on 14 January 1977.

The southern sea otter is the smallest marine mammal in North America (Friends of the Sea Otter [FOTSO] 1999). Adults may reach a length of 4 feet and live an average of 10 to 11 years. Females weigh an average of 45 pounds, while the larger males may average 65 pounds. Sea otters are characterized by a thick coat of dark colored hair, composed of sparse guard hair and dense insulation fur that traps in air and keeps water away from the skin (Williams et al. 1992). They have flattened hind feet that can be used as flippers while swimming. Propulsion is achieved through vertical undulations of hind flippers and tail.

Sea otters are often associated with rocky shores, offshore reefs, tidewater stones, and dense kelp forests (Cohen 1962). They are generally a coastal species that tend to stay within nearshore waters, the outer limits of kelp beds, and in water less than 177 feet in depth (Johnson 1982; Ralls et al. 1996), although they are occasionally sighted more than 3 miles offshore (FOTSO 1999). Sea otters are considered a keystone species as they are important in maintaining kelp forests from grazers like sea urchins (Estes and Duggins 1995). The sea otter diet consists of fish and marine invertebrates, such as mussels, urchins, tunicates, sea stars, bivalves, crabs, abalone, and octopus (Ralls et al. 1995). Sea otters tend to feed in shallow water (<33 feet) and will forage in deeper water (>66 feet) when food resources in shallow waters are less available (Kivitek et al. 1992). Sea otter dives last an average of 74 seconds with longer dives lasting up to 246 seconds (Ralls et al. 1995). Sea otters have a high metabolism and must eat 25 percent of their body weight daily in order to stay alive (FOTSO 1999).

Table 2. Listed Species in the Project Area.

Species (Scientific Name)	*Status*[1]	*Affected by Project*	*Comments*
Southern sea otter (*Enhydra lutris nereis*)	FT	Maybe	Otter distribution extends from San Mateo County south to the Santa Maria River in San Luis Obispo County; some periodically move south into the western part of the Santa Barbara Channel; a small number of otters were relocated by the USFWS to San Nicolas Island.
California brown pelican (*Pelecanus occidentalis californicus*)	FE, SE	Maybe	Present in project area all year; expected to forage near OCS oil and gas facilities.
California least tern (*Sterna antillarum browni*)	FE, SE	Unlikely	Nests on sandy beaches and forages in estuaries and embayments along California coast April-September.
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT	Unlikely	Winter visitor to sandy beaches; breeds on some beaches.
Bald eagle (*Haliaeetus leucocephalus*)	FT	Unlikely	Primarily winter visitors to inland lakes and reservoirs.
Light-footed clapper rail (*Rallus longirostris levipes*)	FE	Unlikely	Coastal salt marsh resident.
Tidewater goby (*Eucyclogobius newberryi*)	FE[2]	Unlikely	Inhabits coastal lagoons and streams in project area; no marine life stage.
Salt marsh bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*)	FE	Unlikely	High salt marsh habitats.

1. F = federal; S = state; E = endangered; T = threatened
2. Proposed for delisting north of Orange County

Sea otters are social animals and are often found in groups ranging from a few to several hundreds of animals (Chanin 1985). Within these groups there is little evidence of avoidance or territorial

behavior (McShane et al. 1995). Among groups of animals, however, sexual segregation is common, with areas of predominantly female otters and areas mainly occupied by male otters (Ralls et al. 1996). Females become sexually mature between 2 to 5 years of age (Monson and DeGange 1995). The reproductive rate is maximal at 5 years and remains stable up to an age of 15 years (Bodkin et al. 1993). The mean gestation period is about 218 days with pups having a mean dependency period of about 153 days (Monson and DeGange 1995). Females typically give birth to one pup per year. The peak in pupping is February to April in California, although pups can be born throughout the year (Watson and Root 1996). Otters have a life span of about 20 years (Daugherty 1979).

In a study of southern sea otter movement and spatial use (Ralls et al. 1996), it was observed that adult males tend to be more sedentary in the short term than females, but in the long term will travel greater distances. Female otters tend to stay in the same general area most of their lives. As a result, female otters must compete with other female otters for resources in a long exploited habitat, which means that they generally have to spend more time foraging for food than males do. This is also a likely contributing factor to the lower survival rate for juvenile female otters compared to juvenile male otters. Juvenile male otters were found to travel the greatest distances and the farthest offshore.

Historically, sea otters ranged along the coasts and islands of the north Pacific rim from northern Japan and Russia across the Aleutian islands and Alaska and down the Pacific coast of North America to the northern parts of Baja California (Chanin 1985). Human exploitation of sea otters for their valuable coats during the eighteenth and nineteenth centuries resulted in their elimination from most of their range by the late nineteenth century (Johnson 1982). During the early 1900s, it was estimated that only 1,000 otters remained as part of about 12 colonies scattered along the historic range (Lensink 1960). It was believed that otters had been eliminated from the entire California coast, until a small colony of up to 300 sea otters was found in 1938 near Big Sur in central California (FOTSO 1999).

Through legal protection, sea otter populations have rebounded quite well. It is estimated that over 100,000 sea otters are now present in Alaska (California Seafood Council 1997). The southern sea otter population off the California coast has grown to about 2,300 otters with a current range from Point Año Nuevo near Monterey south to Purisima Point, north of Point Conception, and a small colony off of San Nicolas Island (FOTSO 1999). The colony that exists off San Nicolas Island is a remnant population from a USFWS translocation project attempted in 1988 (Fahy 2000). The goal was to establish a second genetic stock of southern sea otters in the event that an oil spill along the central California coast should wipe out the main coastal population. Though some still remain off San Nicolas Island, many have returned to their origins off the central California coast.

Status in Project Area

No stable breeding population of southern sea otters is located south of Point Conception along the California coastline, although individuals and groups of transient male otters have been observed at times south of Point Conception near Gaviota (Fahy 2000). In March 1998, California Department of Fish and Game biologists observed a group, estimated to be about 100 animals, south of Point Conception near Little Cojo Bay (California Seafood Council 1997). Otters from the San Nicolas Island colony may occasionally swim across the channel where they could pass through the project zone, but are probably passing through and do not stay long (Fahy 2000).

Sea otters are more likely to pass by OCS oil and gas facilities north of Point Conception because higher numbers are located near there. The OCS oil and gas facilities considered in this project are 3 to 12 miles offshore, which are generally far from the typical nearshore feeding and rearing kelp habitats where otters are usually found. Juvenile male otters would seem the most likely to pass through waters near project oil and gas facilities. The presence of southern sea otters in waters within the vicinity of project oil and gas facilities does not appear to be a common or prolonged occurrence.

2.2.2 California Brown Pelican

Species Description

Brown pelicans were federally listed as endangered on 13 October 1970 and were state-listed as endangered in June 1971.

The California brown pelican is a large fish-eating bird found along the California coastline and on offshore islands. This species is a year-round resident along the California coast. The number of brown pelicans declined throughout their range, beginning in the late 1960s, due to food chain contamination by past use of pesticides (particularly DDT) (Garrett and Dunn 1981; Small 1994). The pelican eggshells became thin, and hatching success declined to nearly zero at some historic rookeries. After the use of DDT was prohibited, brown pelican eggs began hatching successfully, and populations have subsequently increased.

Brown pelicans have been observed feeding as far as the Cortes Bank, about 112 miles offshore from San Diego, but most feeding occurs nearshore in waters less than 12 miles from shore and less than 300 feet deep (USFWS 1992).

Status in Project Area

California brown pelican population levels fluctuate seasonally. More than 7,000 pairs breed in California, primarily on west Anacapa Island and Scorpion Rock near Santa Cruz Island. The highest population is in mid-May when there is an influx of approximately 20,000 post-breeding birds from Mexico, and the numbers remain high until early November (Small 1994). Brown pelicans nest on the Channel Islands (Lehman 1994; Small 1994). Numerous locations along the coast and offshore waters in the vicinity of the project area provide pelicans important resources such as food and resting areas. Brown pelicans appear to be somewhat tolerant of human activity since they often use man-made structures for resting or roosting.

2.2.3 California Least Tern

Species Description

The California least tern was federally listed as endangered on 13 October 1970 and was state listed in June 1971. Loss of habitat and nesting colony disturbance by humans, their pets, and their vehicles have contributed to their decline.

California least terns are the smallest members of the tern sub-family (Sterninae). The breeding population in California was estimated to be about 1,830 pairs in 1991. Fluctuations in population size occur as a result of several factors, including changes in abundance of the small fish used as prey (USFWS 1992). They nest along the coast of California as far north as San Francisco Bay, arriving in April and departing in August to September. Over half of the population in California breeds in San Diego County (Small 1994). Nesting traditionally occurred on sandy beaches close to estuaries and coastal embayments with little human activity. The nest is a simple scrape or depression in the sand that may be adorned with shell fragments, pebbles or wood. One to four, but usually two, eggs are laid and incubated for 20 to 25 days. The chicks are fed on the ground by the adults for approximately 3 weeks, and then are taught to feed. Parents continue to feed the young until they become proficient in foraging, after they migrate from the breeding grounds (USFWS 1992).

The diet of the least tern consists entirely of small fish such as anchovy, topsmelt, surfperch, killifish, and mosquitofish. Fish are caught by plunging into the water from short dives (Bent 1929). California least terns forage mainly in lagoons and estuaries and less frequently in the open ocean.

Status in Project Area

In the project area, this species currently nests near the mouths of the Santa Maria and Santa Ynez rivers, at several locations on Vandenberg AFB (mouth of San Antonio Creek, Purisima Point) (Lehman 1994), near the Santa Clara River mouth, at Ormond Beach, near Mugu Lagoon (USFWS 1981), at Venice Beach, on Pier 400 within Los Angeles Harbor, at Seal Beach Wildlife Refuge, at Bolsa Chica (South Island), at Huntington Beach, and in Upper Newport Bay (Keane Biological Consulting 1999). Foraging is in shallow water along the coast, and the species is not expected to occur offshore in the vicinity of the OCS oil and gas facilities.

2.2.4 Western Snowy Plover

Snowy plovers were federally listed as threatened on 5 April 1993 and have not been recorded as nesting along the south coast of Santa Barbara for several decades (Lehman 1994). Critical habitat was designated for this species on 7 December 1999 (USFWS 1999a).

The western snowy plover is a small shorebird that nests in depressions in the sand above the drift zone. The snowy plover was formerly found on sandy beaches along the length of California, but has dramatically declined in abundance (Page et al. 1981). Loss of habitat and disturbance of nest sites by humans are the primary reasons for the decline (Garrett and Dunn 1981). Nesting currently occurs at 20 locations in California (Page et al. 1981), and the nesting season extends from March through September. Wintering snowy plovers use a variety of beach as well as salt ponds and estuarine sand

and mud flats (USFWS 1999a).

This species forages for small crustaceans and worms along the surf line and adjacent moist sands (Bent 1929).

Status in Project Area

Critical habitat in the project area includes Pismo Beach/Nipomo Dunes, Vandenberg beach (between Point Sal and Purisima Point), Santa Ynez River mouth/Ocean Beach, Jalama Beach, Devereux Beach, Point Castillo/Santa Barbara Harbor beach, Carpinteria Beach, San Buena Ventura Beach, Mandalay Beach/Santa Clara River mouth, Mugu Lagoon beach, and Malibu Lagoon (USFWS 1999a). Nesting in Santa Barbara County still occurs at the Nipomo Dunes area, Vandenberg Beach, and Santa Ynez River mouth. The Jalama Beach, Devereux Beach, Santa Barbara Harbor beach, and Carpinteria Beach areas are used by wintering snowy plovers (Lehman 1994). Approximately 32 plovers were recorded on the Santa Barbara Harbor sand spit in 1993, and 35 were seen on the sandspit in 1997. Snowy plovers were observed foraging on East Beach (Santa Barbara Harbor area) in 1992, 1993, and 1997 (USACE 1998). Nesting also occurs in the Oxnard area (Ventura County), and at Santa Rosa and San Miguel Islands. Snowy plovers are not expected to occur offshore near the OCS oil and gas facilities.

2.2.5 Bald Eagle

Species Description

The bald eagle was federally listed as endangered on 11 March 1967 and reclassified as threatened on 11 August 1995. The species is currently being considered for removal from the federal threatened list. It was state-listed as endangered on 17 June 1971, and that status has not been changed. In California, this species is considered a rare although locally common winter visitor. Approximately 100 pairs breed in the northern mountainous regions of the state. During the winter, this species is found along the coast and at lakes, reservoirs, and coastal wetlands, mainly in the northern half of the state (CDFG 1992).

Status in Project Area

Five to ten bald eagles are observed each year at Lake Cachuma in Santa Barbara County (Lehman 1994) and a captive breeding program has begun to re-establish breeding birds on the Channel Islands (Small 1994). As of 1992, several pairs of eagles bred unsuccessfully on Santa Catalina Island but eggs were not hatching without human intervention.

2.2.7 Tidewater Goby

Species Description

The tidewater goby was federally listed as endangered on February 4, 1994 (USFWS 1994) and is a state-designated species of special concern. A proposed rule to delist the species, except in Orange and San Diego counties, was published on June 24, 1999 (USFWS 1999b).

Tidewater gobies are small (usually less than 2 inches long) with large pectoral fins and fused pelvic fins that form a sucker-like disk. This is the only goby species along the coast of California that is restricted to low salinity (less than 10 parts per thousand [ppt]) waters. All life stages are completed in these waters (i.e., no marine life history phase occurs), although the fish can live in waters with a salinity of over 40 ppt (Swift et al. 1989). This limits the frequency of genetic exchange between populations and lowers the potential for recolonization of a habitat once a population has been lost. Recolonization, however, has been documented to occur at distances up to 20 km from a source population (Lafferty et al. 1996). Tidewater gobies are benthic (living on the bottom substrate) and inhabit shallow waters (less than 3 feet deep) that are slow moving to still but not stagnant (Irwin and Soltz 1984). The coastal lagoons where these fish reside are typically closed off from the ocean by sand bars during summer. The substrate is generally sand and mud with abundant emergent and submerged vegetation (Moyle 1976). In addition to living in coastal lagoons, these fish can also move upstream at least 5 miles as has been documented in San Antonio Creek, Santa Barbara County (Irwin and Soltz 1984).

Spawning in southern California takes place primarily from late April to July, when males dig a vertical burrow approximately 10 to 20 cm into clean coarse sand for nesting. The eggs are attached to the walls of the burrow by the female and are guarded by the male until they hatch in 9 to 10 days. Larval gobies are pelagic and found around vegetation for a short time and then become benthic (Swift et al. 1989). The life span of a tidewater goby is generally only 1 year, although individuals in the northern part of their range may live to 3 years (Lee et al. 1980).

This species formerly inhabited lower stream reaches and coastal lagoons from the Smith River in Del Norte County, California to Agua Hedionda Lagoon in San Diego County (Lee et al. 1980). Its present distribution extends southward only to the mouth of San Onofre Creek in San Diego County. A reassessment of tidewater goby populations (USFWS 1999b) indicates that 85 of approximately 110 historical populations remain. The remaining tidewater gobies in Orange and San Diego counties are located on the U.S. Marine Corps Base, Camp Pendleton.

Status in Project Area

Tidewater goby populations are known to exist in approximately 28 coastal stream lagoons in the project area from the Santa Maria River on the north to Malibu Creek on the south (Swift et al. 1989; Ambrose 1995). This species would not occur near the OCS oil and gas facilities.

2.2.6 Light-footed Clapper Rail

Species Description

The light-footed clapper rail is one of three subspecies of clapper rail (*Rallus longirostris*) found in California. All three clapper rail subspecies are both state and federally listed as endangered. The light-footed clapper rail was federally listed as endangered on 13 October 1973.

Light-footed clapper rails are dependent upon the coastal marshes of southern California and northern Baja California, Mexico, where they are year-round residents. Although salt marsh vegetation, typically with a preponderance of cordgrass (*Spartina*), appears to be the rail's primary habitat, freshwater and brackish water marshes dominated by bulrush (*Scirpus* spp.) and cattail (*Typha* spp.) may also be used. These alternate habitats, when occupied, are typically located in proximity to salt marshes or are a relatively short-distance upstream from an estuary. Marsh habitat appears to be essential for both nesting and foraging. Food items include fish, clams, crabs, snails, insects, and other invertebrates. Clapper rail nesting occurs from mid-March to July with most egg laying occurring from early April to early May (USFWS 1985).

The light-footed clapper rail ranges from Carpinteria Marsh in Santa Barbara County south to San Quintín, Baja California, Mexico. In 1998, seventeen sites were found to support at least one pair of light-footed clapper rails. Yearly censusing for light-footed clapper rails has been performed since 1980. In recent years, a high number of 325 breeding pairs were recorded in 1996, with 307 documented in 1997 (Zembal 1998, 1996). However, a precipitous decline occurred in 1998 as only 222 pairs (a 28 percent decline) were detected at a total of 17 occupied sites. This decline may be due to extreme weather conditions associated with an El Niño storm season. Perhaps of greatest importance is that of the 222 pair recorded in 1998, 189 (85 percent) of these occurred at only three sites. Only three of the remaining 14 sites support greater than four pair (Zembal 1998). Clearly this species is in extreme danger of extirpation at the majority of sites where it is known to occur.

The decline of the light-footed clapper rail is believed to be directly related to the degradation and destruction of salt marsh habitat. It has been estimated that only about 8,500 acres of salt marsh remain between Santa Barbara and the U.S.-Mexico border (USFWS 1985). The remaining, often fragmented, habitat leaves the rail vulnerable to predation by both native and non-native predators. At Seal Beach National Wildlife Refuge, the population declined from 30 to six pairs in just 6 years, and this was attributed to predation by the non-native red fox (*Vulpes vulpes*), which had become established at the site.

Status in Project Area

Only a few light-footed clapper rails are still recorded in Carpinteria Marsh with unknown breeding success. A small population exists at the Point Mugu Naval Air Station, Ventura County and the next viable population of this species is located in Orange County (Lehman 1994). This species would not be present, even as a transient visitor, in the vicinity of the OCS oil and gas facilities.

2.2.8 Salt Marsh Bird's-Beak

Species Description

The salt marsh bird's-beak was listed as endangered by the USFWS in 1978 and the California Department of Fish and Game (CDFG) in 1979. It is also considered threatened or endangered in California and elsewhere by the California Native Plant Society (CNPS list 1B). It is an annual herb with generally purple-tinged foliage, although foliage can be light green in some individuals. Flowers appear as early as April and flowering continues until conditions are no longer appropriate, which can be as late as December. Some flowers have purple bracts while others lack bracts and have cream colored flowers with faint purple lines.

The salt marsh bird's-beak occurs in coastal salt marshes along the west coast of California and Baja California. It generally occurs in areas with relatively low salinity in the spring and low vegetative cover in the high salt marsh habitat (i.e., areas with tidal inundation only during extremely high tides). Other habitats where the salt marsh bird's-beak has been observed include freshwater seeps (at Point Mugu), behind barrier dunes, on dunes, on mounds, and in old oyster shell dredge spoils.

Historical distribution of the salt marsh bird's-beak included the California coastline from Morro Bay to Laguna Mormon in Baja California. It is considered extant in six general areas including Carpinteria Marsh, Mugu Lagoon (and Ormond Beach), Newport Bay, Sweetwater Marsh, Tijuana River Estuary, and Laguna Mormon.

Status in Project Area

Three of the known population locations are within or adjacent to the project area: Carpinteria Marsh, Mugu Lagoon, and Newport Bay. The population in Carpinteria Marsh has been expanded to the east as part of a salt marsh restoration project.

3.0 POTENTIAL EFFECTS ON SPECIES AND HABITAT

Discharges from the OCS oil and gas facilities could potentially affect listed species through direct toxicity (acute or sublethal) through exposure in the water, ingestion of prey that have bioaccumulated toxins from the discharges, or reduction in prey caused by direct or indirect (bioaccumulation) mortality from the toxic pollutants in the discharges or by habitat alteration caused by discharges of muds and cuttings. Direct toxicity to listed species or their food base should be minimal since the discharges are required to meet water quality criteria, established to protect biological resources, outside the mixing zone. The primary mode of potential impact to listed species would be through bioaccumulation of toxins in their prey. The main chemicals of concern are those listed in Table 1.

There is some evidence that planktonic and benthic organisms may bioaccumulate heavy metals from drilling muds (Sweeney 1980; Mariani et al. 1980; Crippen et al. 1980) and that biomagnification through the food web does not occur for metals but may for organic substances (Schafer et al. 1982). Many animals have the capability to detoxify metals and organic compounds that enter their bodies (Jenkins et al. 1982; Brown et al. 1982). This is accomplished at the subcellular level where a protein (metallothionien) sequesters the metals and prevents them from reaching sites where toxic reactions could occur. Detoxification of the metals, however, is likely to have metabolic costs to the organisms and use energy normally needed for other activities (SAI 1984). Petroleum hydrocarbons accumulated by organisms are released at varying rates that depend in part on the ability of the organisms to metabolize these substances. Arthropods can generally metabolize petroleum hydrocarbons while molluscs cannot, and polychaetes apparently metabolize naphthalene but not methylnaphthalene (Neff and Anderson 1981). Thus, molluscs tend to accumulate petroleum hydrocarbons to higher concentrations, and retain them longer, than other marine organisms. Female polychaetes do not release accumulated hydrocarbons until they spawn, which supports the hypothesis that the hydrocarbons stored in lipid deposits are released when these reserves are mobilized. Laboratory experiments with several species of fish present along the coast of California indicate that naphthalene and benzo(a)pyrene were taken up, metabolized in the liver, and the byproducts excreted through the bile (Lee et al. 1972).

Habitat alteration as a result of muds and cuttings discharges occur during drilling of wells, most of which take place within a short time after installation of a platform. Thereafter, drilling and associated discharges are at intervals and of smaller magnitude. The cuttings are heavier and accumulate under or in the immediate vicinity of the platform while muds can settle out as much as 2 to 3 miles away, depending on oceanographic conditions (Menzie 1982; Sauer 1983). The physical and chemical alteration of bottom sediments can alter the benthic invertebrate communities present, and thus the food for organisms that feed on them. The area affected relative to the amount of unaffected habitat in the project area is very small and would have no measurable effects on the food base of the listed species addressed in this biological assessment.

3.1 PROJECT EFFECTS

The following provides a discussion of potential impacts to the species covered by this biological assessment. A summary of these impacts is shown in Table 3.

Table 3. Summary of Impacts

Species	*Impacts*
Sea otter	No impact. Otters are not expected to forage near the OCS oil and gas facilities (in the northern part of the project area). No bioaccumulation of pollutants in their food is expected.
California brown pelican	No impact. Although pelicans may forage near the OCS oil and gas facilities, no bioaccumulation of pollutants in their forage fish is expected.
California least tern	No impact. Terms are not likely to forage near OCS oil and gas facilities. No bioaccumulation of pollutants in forage fish is expected.
Western snowy plover	No impact. No pollutants expected to reach beaches used for foraging and nesting.
Light-footed clapper rail	No impact. Pollutants from OCS oil and gas facilities not expected to reach rail habitat.
Bald eagle	No impact. Eagles not expected to forage near OCS oil and gas facilities. No bioaccumulation of pollutants in forage fish expected.
Tidewater goby	No impact. Pollutants from OCS oil and gas facilities not expected to reach goby habitat.
Salt marsh bird's-beak	No impact. Pollutants from OCS oil and gas facilities not expected to reach bird's-beak habitat.

Southern Sea Otter

Southern sea otters forage in waters inshore of the OCS oil and gas facilities. The potential for their food organisms to be exposed to pollutants from the platform discharge in concentrations high enough for sublethal effects or bioaccumulation of the pollutants is extremely low due to the distance between the OCS oil and gas facilities and the otter foraging areas and dilution by ocean currents. A few individual sea otters may swim near some of the OCS oil and gas facilities during movement between the offshore islands and the mainland shore, but the duration of time that these individuals would be present in the immediate vicinity of the OCS oil and gas facilities is very small. Direct exposure of these transitory otters to pollutants from the discharges would have no effect on the otters since their insulating fur would prevent direct contact with their skin. Dilution of the water from around the OCS oil and gas facilities trapped in the outer surface of their fur would be diluted as they swam away from the platform and thus would not result in ingestion of pollutants during grooming. The proposed discharges are expected to have no impacts on sea otters.

California Brown Pelican

California brown pelicans forage on small schooling fish that use wide areas of the ocean, including the areas around the OCS oil and gas facilities. Their prey are not expected to be exposed to or to bioaccumulate pollutants discharged from the OCS oil and gas facilities because the fish and their

planktonic food would be in the vicinity of the OCS oil and gas facilities for a short period of time, if at all. Pelicans resting on the water surface would not be expected to take up such pollutants through the skin of their feet. Furthermore, many of the brown pelicans present are from Mexico and are only present for part of the year. The platform structures may provide resting places for pelicans. No impacts to the pelicans are expected.

California Least Tern

Although least terns forage on fish in coastal waters and estuaries, no impacts to the species are predicted for the following reasons. The terns are present along the coast of California for five to six months of the year. Forage species include (1) those that spend all of their life in estuaries or along the shoreline where they would not be exposed to pollutants from the platform discharges and (2) small pelagic schooling fish (e.g., anchovies) that are not known to be attracted to OCS oil and gas facilities and that use large areas of the ocean. Thus, their food base is not expected to bioaccumulate pollutants from the platform discharges.

Western Snowy Plover

Discharges from the OCS oil and gas facilities more than three miles offshore are expected to have no effects on western snowy plovers using beaches for foraging, resting, and nesting. Pollutants in the discharges would be highly diluted by the time they reached the coastline and thus would have no toxic effects on the invertebrates used by the plovers for food. Due to the low pollutant concentration, bioaccumulation by these prey organisms is also not expected.

Bald Eagle

Wintering bald eagles in the project area are located primarily at inland lakes and reservoirs and would not be affected by the project discharges. The eagles at the Channel Islands are not expected to forage in the vicinity of the OCS oil and gas facilities, and bioaccumulation of pollutants in the fish they feed on is not expected to occur.

Light-footed Clapper Rail

Light-footed clapper rails are known to be present in only three coastal salt marshes in the project area. Due to the distance of the OCS oil and gas facilities from these habitats (more than 3 miles), pollutants discharged from the facilities would be diluted to background levels well before reaching the coastline. The potential that such pollutants could enter the marshes is extremely low since seawater only enters during high tides when the mouth of the marsh is open. This species would not be directly exposed to pollutants from the platform discharged nor would their prey. Thus, no impacts to light-footed clapper rails are expected.

Tidewater Goby

Discharges from the OCS oil and gas facilities are expected to have no effect on tidewater goby populations in the project area, primarily due to the distance (minimum of 3 miles) of the facilities from their habitats. Over that distance, any pollutants discharged would be diluted to background

levels long before reaching the coast. In addition, the coastal lagoons are isolated from the ocean during the summer to fall when natural sand berms close off the creek mouths. Thus, tidal exchange in the lagoons inhabited by tidewater gobies is usually limited to the winter when the creek mouths are open and high tides occur. This is also the time of year that the gobies often move upstream out of the lagoons, further minimizing the potential for exposure to chemicals from project discharges.

Salt Marsh Bird's-Beak

The salt marsh bird's-beak occurs in high marsh habitat that is only influenced by high tides when the mouth of the marsh is open and runoff from streams entering the marsh. The discharges from OCS oil and gas facilities more than 3 miles offshore are not expected to reach habitat for the salt marsh bird's-beak and, thus, would have no impacts on this species.

3.2 CUMULATIVE IMPACTS

Discharges from the OCS oil and gas facilities to be covered by the proposed general permit have the potential to act cumulatively with discharges from platforms in state waters (one in the Santa Barbara Channel and two off Huntington Beach), marine vessels, and wastewater treatment plants. Since all of the platforms have been in place for a number of years, most of the drilling muds and cuttings expected to be generated by these facilities have already been discharged. Thus, the discharges of muds and cuttings from the OCS oil and gas facilities would add a small increment to the existing accumulation in the project area. The other platforms also have discharges, other than muds and cuttings, similar to those from the OCS oil and gas facilities. These discharges plus those from wastewater treatment plants and vessels all add to the pollutant load in coastal waters that could affect federally-listed species. The location of these discharges is spread out in coastal waters such that most do not directly interact. Dilution, chemical reactions, and settling of suspended materials reduces the concentration of pollutants in oceanic waters, while some of the pollutants accumulate in the sediments. Those entering the sediments may ultimately end up in the adjacent basins (SAI 1984). Discharges from the OCS oil and gas facilities would add to this pollutant load. However, the amount of pollutants to be discharged from the operating platforms is expected to be relatively small compared to the total pollutant load from all sources. Thus, the continued discharge from the OCS oil and gas facilities would not add substantially to cumulative pollution of the project area and would not adversely affect any listed species in the area.

4.0 MEASURES TO REDUCE IMPACTS TO SPECIES

No impacts were identified that would require mitigation to reduce the level of impact. The potential for impact is very low for all listed species, and measures are not needed to reduce this potential further.

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